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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,277	08/30/2001	Ahmad Jalali	PA000054	8791

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Patents Department
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EXAMINER	
TSEGAYE, SABA	

ART UNIT	PAPER NUMBER
2662	9

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/943,277	JALALI, AHMAD	
	Examiner	Art Unit	
	Saba Tsegaye	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-29 and 31-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-29 and 31-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. Claims 1-4, 7, 16-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh et al. ('363) in view of Mycynek (US 6,246,431).

Regarding claims 1 and 16, Ghosh discloses, in Fig. 5-9, a method for pre-coding in a communication system, comprising: determining pre-coder parameters (column 2, lines 54-56; column 5, lines 38-52);

pre-coding first data in accordance with the determined pre-coder parameters (column 2, lines 54-56; column 5, lines 38-65);

transmitting (106) the pre-coded first data (column 2, lines 54-67; column 6, line 52-column7, line 22); and

transmitting (106) non pre-coded first reference data (column 2, lines 58-60; column 9, lines 45-46).

However, Ghosh does not disclose the non-pre-coded first reference data on a common pilot signal used as a phase reference.

Mycynek discloses, in Fig. 1, a pre-coder 36, a modulator/transmitter 38 and carrier/pilot generator. The modulator is arranged to modulate an in-phase pilot component of a carrier signal with the pre-coded digital video signal and transmit the modulated carrier signal over channel (column 5, lines 9-41).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use a pilot signal as a phase reference, such as that suggested by Mycynek, in the

transmitting of non-pre-coded first reference of Ghosh in order to facilitate re-generation of the carrier in the receiver.

Regarding claim 2, Ghosh discloses the method wherein determining a pre-coder parameters comprises:

receiving (102) a reference data (column 2, lines 54-56; column 6, lines 5-51); and

determining the pre-coder parameters in accordance with the received reference data and the reference data (column 2, lines 60-67; column 6, lines 5-51).

Regarding claim 3, Ghosh discloses the method wherein determining a pre-coder parameters comprises:

receiving the non pre-coded first reference data (column 2, lines 58-67; column 5, lines 5-51);

determining the pre-coder parameters in accordance with the received non pre-coded first reference data and the first reference data (column 2, line 60-column 3,line 28; column 10, lines 14-28); and

transmitting the determined pre-coder parameters (column 2, lines 60-67; column 9, lines 51-58).

Regarding claim 4, Ghosh discloses the method further comprising:

receiving the determined pre-coder parameters (column 5, lines 48-52); and

providing the determined pre-coder parameters to the pre-coder (column 2, lines 60-67; column 5, lines 5-51) (column 2, lines 60-67; column 5, line 52-column 6, line 5).

Regarding claim 7, Ghosh discloses the method wherein the transmitting a non pre-coded reference data comprises:

transmitting a discontinuous non pre-coded reference data (column 2, lines 58-60).

Regarding claim 17, Ghosh discloses, in Fig. 5, the apparatus, further comprising:

a first receiver (105) communicatively coupled to the pre-coder (106) configured to receive a reference data;

a first processor communicatively coupled to the first receiver(105, 106) (column 7, lines 7-22); and

a storage medium communicatively coupled to the first processor (106) and containing a set of instructions executable by the processor (column 6, lines 19-31) to:

determine the pre-coder parameters in accordance with the received reference data and the reference data (column 2, lines 54-56; column 5, lines 38-52).

Regarding claim 18, the apparatus, further comprising:

a second receiver (102) configured to receive the non pre-coded first reference data (column 2, lines 58-60);

a second processor communicatively coupled to the second receiver (108, 109);

a storage medium communicatively coupled to the first processor and containing a set of instructions executable by the processor to (column 11, lines 12-17):

determine the pre-coder parameters in accordance with the received non pre-coded first reference data and the non pre-coded first reference data (column 2, lines 60-67; column 6, lines 5-51); and

a second transmitter communicatively coupled to the second processor (103) configured to transmitting the determined pre-coder parameters (column 7, lines 23-48).

Regarding claim 19, the apparatus, wherein the first receiver (105) is further configured to:

receive the determined pre-coder parameters (column 7, lines 7-22); and

provide the received pre-coder parameters to the pre-coder (column 7, lines 7-22).

Regarding claim 21, Ghosh discloses the apparatus wherein the first transmitter is further configured to transmit the non pre-coded first reference data continuously (column 2, lines 58-60).

2. Claims 1, 5, 6, 8, 11, 13-16, 20, 22-26 and 29, 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhou et al. (11th IEEE workshop on statistical signal processing) in view of Mycynek ('431).

Regarding claim 1, Zhou discloses, in Fig. 1, a method for a method for pre-coding in a communication system, comprising: determining pre-coder parameters (page 383, **5. Resolving scalar ambiguities**);

pre-coding first data in accordance with the determined pre-coder parameters (page 383, **5. Resolving scalar ambiguities**);

transmitting the pre-coded first data (page 381-382, **2. system description**); and

transmitting non pre-coded first reference data (page 381-382, **2. system description**).

However, Zhou does not disclose the non-pre-coded first reference data on a common pilot signal used as a phase reference.

Mycynek discloses, in Fig. 1, a pre-coder 36, a modulator/transmitter 38 and carrier/pilot generator. The modulator is arranged to modulate an in-phase pilot component of a carrier signal with the pre-coded digital video signal and transmit the modulated carrier signal over channel (column 5, lines 9-41).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use a pilot signal as a phase reference, such as that suggested by Mycynek, in the transmitting of non-pre-coded first reference of Zhou in order to facilitate re-generation of the carrier in the receiver.

Regarding claims 11, 16 and 29, Zhou discloses, in Fig. 1, a method for demodulating pre-coded data, comprising:

receiving a reference data and a pre-coded data (page 381, **1. introduction**); and

determining demodulator parameters in accordance with the received reference data and the reference data (pages 381-382, **2. system description**); and

demodulating the pre-coded data in accordance with the determined demodulator parameters (pages 381-382, **2. system description**).

However, Zhou does not disclose the non-pre-coded first reference data on a common pilot signal used as a phase reference.

Mycynek discloses, in Fig. 1, a pre-coder 36, a modulator/transmitter 38 and carrier/pilot generator. The modulator is arranged to modulate an in-phase pilot component of a carrier signal with the pre-coded digital video signal and transmit the modulated carrier signal over channel (column 5, lines 9-41).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use a pilot signal as a phase reference, such as that suggested by Mycynek, in the transmitting of non-pre-coded first reference of Zhou in order to facilitate re-generation of the carrier in the receiver.

Regarding claims 8 and 23, Zhou discloses the method wherein the reference data comprise a non pre-coded pilot signal (page 383, **5. Resolving scalar ambiguities**).

Regarding claims 5, 13 and 31, Zhou discloses the method wherein the reference data comprise a pre-coded pilot signal (page 383, **3. Resolving scalar ambiguities**).

Regarding claims 6, 14, 24 and 32, Zhou discloses the method wherein the reference data are continuous reference data (pages 381-383, 1. introduction; **5. Resolving scalar ambiguities**).

Regarding claims 15 and 33, Zhou discloses the method wherein the reference data are discontinuous reference data (page 382; **3. Semi-blind multi-channel estimation**).

Regarding claim 20, Zhou discloses the apparatus wherein the pre-coder is further configured to pre-code a second reference data in accordance with the determined parameters (pages 381-382, **2. system description**); and

wherein the first transmitter is further configured to transmit the pre coded second reference data (pages 381-382, **2. system description**).

Regarding claims 22 and 25, Zhou discloses the apparatus wherein the first transmitter is further configured to transmit the non pre-coded first reference data discontinuously (pages 381-382, **2. system description**).

Regarding claim 26, Zhou discloses the apparatus wherein the pre-coded second reference data comprise a dedicated pilot data (page 383, **5. Resolving scalar ambiguities**).

3. Claims 11, 29 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito (EP 1 063784) in view of Mycynek ('431).

Saito discloses, in Fig. 5, a transmitter 501, a memory storage unit 504, a transmission rate decision section 503 (claimed a digital signal processor), a pre-coding section, and a transmission section 109 (as in claims 34 and 36); and

a receiver 110, a reception sections 113, a memory 506, and a demodulation section 114 (as in claims 11, 29, 35 and 37).

However, Saito does not disclose the non-pre-coded first reference data on a common pilot signal used as a phase reference.

Mycynek discloses, in Fig. 1, a pre-coder 36, a modulator/transmitter 38 and carrier/pilot generator. The modulator is arranged to modulate an in-phase pilot component of a carrier signal with the pre-coded digital video signal and transmit the modulated carrier signal over channel (column 5, lines 9-41).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use a pilot signal as a phase reference, such as that suggested by Mycynek, in the transmitting of non-pre-coded first reference of Saito in order to facilitate re-generation of the carrier in the receiver.

4. Claims 9, 10, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghosh in view of Chung (US 4,995,057).

Ghosh discloses all the claim limitations as stated above. Further, Ghosh discloses, in Fig. 7, a forward equalizer 132 and a means for storing a plurality of calculated IRF coefficients

corresponding to respective ones of the plurality of transmitter. However, Ghosh does not expressly disclose a processor communicability coupled to the at least two equalizers.

Chung discloses, in Fig. 3, equalizer 380,381 and sampler 384 (column 3, lines 13-21; column 6, lines 35-67; column 8, line 64-column 9, line 11).

It would have been obvious to one ordinary skill in the art at the time the invention was made to use more than one equalizer, such as that suggested by Chung, in receiver of Ghosh in order to optimize the quality of data and to assure the noise at the input to the receiver decoder is both Gaussina and white.

Response to Arguments

5. Applicant's arguments with respect to claims 1-11, 13-29 and 31-37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saba Tsegaye whose telephone number is (703) 308-4754. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (703) 305-4744. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

ST
November 7, 2003

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
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